

Name: _____

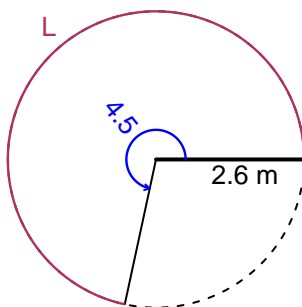
Date: _____

Trig Final (TEST v665)

- You should have a calculator (like [Desmos](#)) and a [unit-circle](#) reference sheet.

Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 2.6 meters. The angle measure is 4.5 radians. How long is the arc in meters?

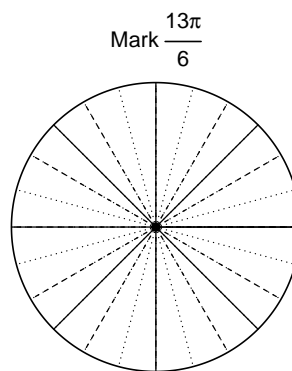


Question 2

Consider angles $-\frac{15\pi}{4}$ and $\frac{13\pi}{6}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(-\frac{15\pi}{4}\right)$ and $\sin\left(\frac{13\pi}{6}\right)$ by using a unit circle (provided separately).



Find $\cos(-15\pi/4)$



Find $\sin(13\pi/6)$

Question 3

If $\tan(\theta) = \frac{15}{8}$, and θ is in quadrant III, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = 3.65$ meters, a frequency of 8.14 Hz, and an amplitude of 6.41 meters. At $t = 0$, the mass is at the midline and moving down. Write an equation to model the height (y in meters) as a function of time (t in seconds).